January 19, 2001

TO: Environmental Health Managers **GMP #112**
District Health Directors
OEHS Staff

FROM: Donald J. Alexander, Director
Division of Onsite Sewage and Water Services

SUBJECT: Interim Approval for Puraflo™ Peat Filter Treatment System
Onsite – Product Approval - Puraflo™

In 1995 Bord Na Mona Environmental Products U.S., Inc. sought and received approval to begin an experimental testing protocol for the Puraflo™ system under § 2.25 of the *Sewage Handling and Disposal Regulations* (the *Regulations)*. The basis for the testing protocol was the stated policy of the *Regulations* to "…encourage the development of any new methods, processes, and equipment which appear to have application for the treatment and disposal of sewage; however, new developments shall have been thoroughly tested in a full scale or representative pilot system utilizing this process and equipment." The protocol was designed to gather performance data from systems providing highly treated effluent installed where the separation distance to rock and/or water table was less than required by the *Regulations* and utilized soil absorption areas smaller than required under the *Regulations*. In addition, absorption area configurations did not substantially comply with the *Regulations* and the protocol would demonstrate the treatment capability of the Puraflo™ modules. The specific details of the protocol were published June 9, 1995, as GMP #69.

On March 19, 1996, the experimental protocol was amended to modify the backup system requirements as the result of a variance granted by the commissioner and to clarify the absorption area requirements. The amended protocol was issued as GMP #79 and the previous one was rescinded. The 1996 protocol allowed for a backup system that provided a 100% reserve area meeting the same site and soil requirements contained in the protocol and also provided new charts for sizing absorption areas. Both the 1995 and 1996 protocols required detailed monitoring and testing of 24 systems and limited the total number of Puraflo™ systems to 100 statewide.

The experimental protocol was revised again on February 12, 1998, to reflect an increase in the

and evaluation portion of the protocol. The 1998 revisions to the protocol were published in GMP #93 which replaced GMP #79.

At the end of the experimental testing period the Virginia Department of Health (VDH) reviewed the performance of the Puraflo™ system under the experimental protocol. That review included evaluating the specific performance data gathered from the experimental protocol, field observations of selected systems, and anecdotal evidence offered by VDH field staff, system owners, and Bord Na Mona representatives. VDH determined that the Puraflo™ system had met the objectives established under the experimental protocol. In a letter dated January 21, 2000, State Health Commissioner Anne Peterson, M.D., M.P.H. granted a three-year waiver that would allow the Puraflo™ system to be installed during the interim period until the Board of Health promulgates regulations for this system. Commissioner Peterson's waiver was issued in accordance with § 370.D of the *Regulations* and provided that permits were to be issued in accordance with Parts I through VI of GMP #93.

Since Commissioner Peterson's January 21, 2000, waiver, a number of questions have been raised pertaining to the use of GMP #93 under Commissioner Peterson's waiver. The most compelling issue has been the sizing of absorption areas. VDH field personnel reported that they were receiving applications for permits containing Puraflo™ designs that were considerably smaller than those derived using the design tables in GMP #93. Bord Na Mona representatives reported that VDH was denying applications for system designs that complied with the criteria contained in GMP #93. The Division of Onsite Sewage and Water Services was asked to resolve the apparent conflict and this memorandum is the result of that effort.

The basis for the disagreements over the absorption area sizing appears to stem from the methods used to calculate total absorption areas. Under the experimental protocol, the sizing charts were based, first on total square footage (GMP #69), and later on the number of linear feet of trench that must be added to the primary (16' x 20') absorption pad when the pad alone was not sufficient to provide the required absorption area (GMP #79 & #93). The basis for the sizing charts included an allowance for "sidewall" absorption area[1]. The experimental protocol allowed systems to be configured as pad-only, trench-only, or as a combination of trenches and a pad.

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1 VDH has always used actual trench-bottom area as the sizing basis for all onsite systems. Bord Na Mona's inclusion of sidewall absorption area was considered acceptable as part of an experimental protocol. This revised policy contains sizing criteria that are based on **actual trench-bottom area**.

Under the experimental protocol the practice of utilizing trench-only configurations in some soils, typically Texture Groups III and IV, rapidly developed. The disagreements over sizing appear to come from two different methods for calculating the total absorption area. Bord Na Mona representatives assumed that trench-only configurations would be based solely on the formula used to produce the charts in the experimental protocol and VDH staff assumed that the

primary pad area (320 square feet) was the starting point for adding additional absorption area when needed. In Group III and IV soils using the Bord Na Mona formula for sizing trench-only systems tended to produce systems approximately 10%-15% smaller than systems sized with the pad area as the starting point for adding additional absorption trenches. In Group I and II soils the size difference for trench-only systems was even greater and approached 50% or more. The sizing methodology contained in this policy is based on the method used to design the systems evaluated in the experimental protocol. This policy also establishes a minimum absorption area size of 320 square feet per system, which was also part of the experimental protocol.

In addition to dealing with the sizing criteria for Puraflo™ systems, this memorandum will also seek to clarify the scope of the approval granted, establish performance expectations for the system consistent with the performance measured during the experimental protocol, and provide other minor technical clarifications.